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Small genomes are still shrinking

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Buchnera is a mutualistic intracellular symbiotic bacterium found in many aphids, and over millions of years it has experienced a dramatic decrease in genome size, retaining only those genes essential for its specialized lifestyle. In the March 19 Proceedings of National Academy of Sciences, Rosario Gil and colleagues from Universitat de Valencia, Spain, show that the *Buchnera* genome is still undergoing a reductive process.

Gil *et al.* performed physical mapping of *Buchnera* genomes obtained from five aphid lineages. They found that the genome size among different lineages is not conserved, but has been reduced down to 450 kb in some species. In addition, they showed evidence that six species of *Buchnera* have a genome size smaller than that of Mycoplasma genitalium, the smallest bacterial genome reported thus far (580 kb; *Proc Natl Acad Sci USA* 2002, 10.1073/pnas.062067299).

"The sequencing of these smaller genomes will give new clues about the lost genes that are essential for bacterial growth, in an attempt to define a minimal genome [the minimum number of genes necessary to support cellular life]," suggested the authors.

References

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